A COMPARISON OF LIGHT TRAP CATCHES USING TWO TYPES OF DISCHARGE LAMP

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Introduction

THOSE of us who regularly record moths at light traps with mercury-vapour (m.v.) lamps have been alarmed to discover that the traditional, non-fluorescent m.v. lamp is no longer available. With only one of these lamps still in my possession, and all attempts to secure others meeting with failure, I decided to mount a preliminary experiment to try to compare the catches of macrolepidoptera (including Pyralidae) attracted to a Robinson Trap fitted with either the traditional GEC 125W MB/U mercury vapour lamp, or the currently available substitute sold by Watkins and Doncaster, the Wotan 125W HQL halogen lamp.

Design of any comparative experiment such as this is fraught with difficulties, given the poorly defined effects of both trap site and weather conditions on nightly catches and the fact that the attractiveness of a particular lamp for moths declines with its age and length of "service". Each lamp was used 15 times over a period of 30 nights. The trap was placed in exactly the same position each night, and operated from dusk to dawn. Grass around the trap was regularly mown, and the site examined at least twice nightly to incorporate all those individuals not actually in the trap. At dawn, the trap was transferred to a cool room, for analysis later in the day.

By way of a parallel experiment, my father, A.J. Dewick, finding that 400 watt MB/U mercury vapour lamps he has used since the 1940s were no longer available, compared the performance of his sole surviving lamp with that of the Phillips HP1-T using a similar alternating regime to that described above, but during the month of October. His trap design is very different to my own, being a large purpose-built brick building with the light mounted on the roof, some nine feet above ground level.

Results — 125W lamps

Each of the lamps has a distinctive appearance when alight. The MB/U light is harshly blue, whereas the HQL has a more pinkish hue, due to the fluorescent coating, and appears less bright than the MB/U. The expectation, in line with "received wisdom", was that the MB/U would perform significantly better than the HQL. Confounding expectation, the results did not clearly fit into the expected pattern.

The total number of species caught at each lamp was very similar (Table 1), with the HQL fractionally ahead. The mean number of species per night was, however, virtually identical. The total number of individuals caught was, in contrast, nearly 10% higher with the HQL lamp (1038 individuals compared with 951).

Table 1: Comparison of the number of species and number of individuals trapped in May and early June 1990 using either the GEC MB/U or Wotan HQLlamps. Both rated at 125W.

Date	*Number of Species*		*Number of Individuals*	
	MB/U	**HQL**	**MB/U**	**HQL**
May 3	38	—	94	—
4	—	34	—	98
5	—	33	—	96
6	37	—	103	—
7	43	—	109	—
8	—	43	—	120
9	34	—	75	—
10	—	29	—	61
11	—	12	—	20
12	16	—	22	—
13	22	—	39	—
14	—	19	—	28
15	33	—	63	—
16	—	38	—	66
17	—	35	—	69
18	26	—	53	—
19	17	—	32	—
20	—	—	—	—
21	—	28	—	48
22	23	—	36	—
23	—	13	—	23
24	—	39	—	86
25	9	—	13	—
26	13	—	16	—
27	—	8	—	9
28	30	—	59	—
29	—	29	—	61
30	—	48	—	129
31	50	—	146	—
June 1	41	—	91	—
2	—	39	—	124
Total	**109**	**113**	**951**	**1038**
Mean/Night	**7.27**	**7.53**	**63**	**69**

Table 2: Comparison of the number of species and number of individuals trapped in October 1990 using either the Phillips MB/U or Phillips HP1/T lamps. Both rated at 400W.

Date	*Number of Species*		*Number of Individuals*	
	MB/U	**HP1-T**	**MB/U**	**HP1-T**
Oct. 1	25	—	261	—
2	—	29	—	287
3	20	—	172	—
4	—	10	—	41
5	17	—	49	—
6	—	27	—	186
7	18	—	68	—
8	—	10	—	17
9	17	—	59	—
10	—	28	—	223
11	30	—	208	—
12	—	29	—	275
13	29	—	189	—
14	—	34	—	339
15	38	—	246	—
16	—	27	—	116
17	31	—	209	—
18	—	36	—	379
19	34	—	269	—
20	—	33	—	291
21	24	—	119	—
22	—	19	—	55
23	19	—	59	—
24	—	31	—	175
25	22	—	117	—
26	—	16	—	56
27	13	—	41	—
28	—	20	—	47
29	16	—	33	—
30	—	13	—	37
Total	**58**	**63**	**2099**	**2524**
Mean/night	**3.86**	**4.2**	**140**	**168**

Differences between individual species was more difficult to discern. Certainly some species were recorded at MB/U and not HQL, and vice-versa. The numbers involved were rather small and it would not be prudent to draw conclusions on this sort of sample size. A general impression was that the Noctuidae in particular came in greater numbers to HQL than to

MB/U — the ratio for the genus *Agrotis,* for example, being 107/153 and that for *Orthosia* 165/173.

Throughout the test period there was very little in the way of immigration, an activity that could seriously distort this type of comparison. A few *Autographa gamma* were taken throughout the recording period, whilst two *Agrotis ipsilon* and a single *Orthonama obstipata* were taken on the last night.

Results — 400W lamps

The Phillips catalogue states that the HP1-T contains metal halides to "subdue the mercury spectrum". The assumption again was that this type of lamp would be far less effective than the MB/U type. Both lamps are made of clear glass. The MB/U emits an intensely blue glow, entirely lacking in the HP1-T.

Once again, our fears appeared to be groundless with the mean number of species taken with the HP1-T being slightly higher than with the MB/U (Table 2). The total number of individuals was considerably higher (2524 with HP1-T against 2099 with MB/UL).

Table 3: Comparison of total number of individuals of all species noted in both tests (125W in May/June and 400W in October).

Species	*May/June, 125W*		*October 400W*	
	MB/U	**HQL**	**MB/U**	**HP1-T**
Eudonia angustea	9	5	20	10
Timandra griseata	9	14	1	0
Orthonama obstipata	0	1	2	0
Agrotis segetum	5	9	42	67
A. ipsilon	0	2	34	42
A. puta	49	68	29	45
Noctua pronuba	4	4	301	385
Diarsia rubi	6	7	1	0
Xestia c-nigrum	6	16	338	449
Discestra trifolii	18	18	0	1
Mamestra brassicae	0	1	1	0
Lacanobia oleracea	7	13	1	3
Mythimna pallens	14	15	6	6
Phlogophora meticulosa	8	7	135	179
Hoplodrina ambigua	3	7	8	3
Caradrina clavipalpis	0	1	1	2
Autographa gamma	9	6	57	117
Hypena proboscidalis	0	1	11	9
Total	**147**	**195**	**988**	**1318**

Generally the results of this test are very similar to those conducted with the 125W lamps (Table 1). Most species were taken in higher numbers with the HP1-T, including *Noctua pronuba* with a ratio of 385/301, *Agrochola circellaris* (82/53) and *Aporophyla lutulenta* (11/6). The genus *Agrotis* produced a ratio of 154/105, even greater than with the 125W lamp. A few species came in greater numbers to the MB/U lamp, and these included *Larentia clavaria* (11/6) and *Rhizedra lutosa* (96/80). Numbers of *Autographa gamma* must be treated with caution, as October produced a few nights of heavy immigration.

Conclusions

The size of the sample, in terms of number of species and individuals noted, is rather small and it would be unwise to draw too many conclusions from these data. It is worth noting that the gloomy comments heard about the poor performance of HQL lamps in comparison with MB/U are not borne out by this limited investigation — in fact, the reverse is suggested! Table 3 shows the relative distribution of selected species in both the 125 and 400 W trials.

Clearly much still remains to be learned about the various lamps available and their attractiveness to moths.

Further observations on *Aderus populneus* (Creutzer) (Col.: Aderidae)

In a pertinent and perceptive paper (*Ent. Rec.* **93**: 208-209) Mr A.A. Allen questioned the remarkably diverse (in spider's webs, ash seeds, manure heaps and houses) range of situations in which *Aderus populneus* (Creutzer) has been observed. The purpose of this contribution is to throw further light on this topic, although conclusions must await further investigation.

Mr Allen's claim to establish a clearer understanding of the biology and periodicity of this rather rare species can now be amplified somewhat. I can speak only from knowledge of the species in Worcestershire, which provides a northern extension of its southern British range.

This species is essentially xylophagous (oak), overwinters as a quiescent imagine. The thermal environment in winter appears to be crucial to survival.

It appears to me at the moment that *A. populneus* is one of a fastidious and sensitive group of xylophagous beetles which only rarely encounter the sum total of conditions required for successful colonisation. A number of these conditions are met most often in closed-canopy forest, and the omission of this species from the list of those indicating that relict habitat (Harding, P.T., Rose, F. 1986, *Pasture Woodlands in Lowland Britain.* ITE) may require review.